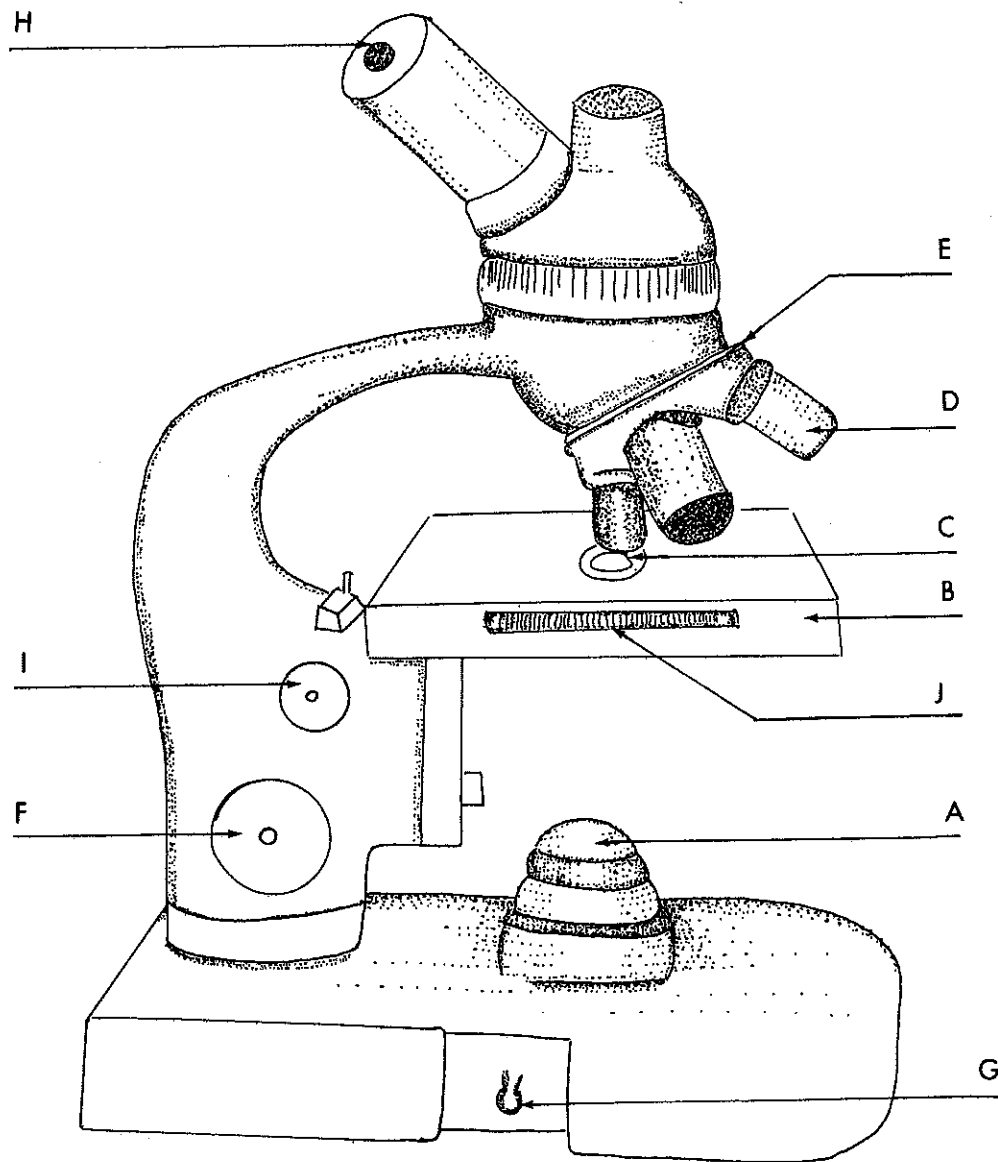


1-1. THE COMPOUND MICROSCOPE

Instructions: (1.) Read the text and the statements. (2.) Use the text and the statements to help you to label the diagram and answer the questions.



While you are learning about the human body, you will observe both macroscopic and microscopic structures.

The heart, the kidneys, and the bones have both macroscopic and microscopic structures. Macroscopic structures may be examined with the unaided eye; on a bone, for example, you can locate the scars where the muscles were attached, the holes where major blood vessels entered, and the articular surfaces—where the bone was attached to some other part of the skeleton—without using magnification. Microscopic structures, on the other hand, cannot be clearly observed without a microscope. The diagram shows a compound microscope similar to the one you will be using.

Procedure

Obtain the following materials:

- ☐ any prepared microscope slide with a specimen that can be located on the slide without magnification
- ☐ a compound microscope

1. Usually, a compound microscope uses a condenser as a light source; it concentrates light from a high-intensity bulb and directs it through the microscope's lenses. Arrow A points to the condenser. Locate this arrow on the diagram and identify the condenser.
2. To begin a microscopic observation, place a glass slide containing a specimen on the microscope's stage and clip it down. If the specimen is large enough for you to see, check to be sure it is centered over the round opening called the "aperture"; this will insure that the specimen is in line with the lenses. Arrow B points to the stage, and arrow C points to the aperture.
3. After the slide is in place, snap the low-power objective lens into place by turning the nose piece until the shortest lens (usually the one with a 5 or a 10 stamped on it) is over the specimen. You can usually tell if this lens is locked into place by listening for a click. Arrow D points to an objective lens, and arrow E points to the nose piece.
4. Lower the stage (the barrel on some microscopes) by turning the coarse adjustment knob. Arrow F points to the coarse adjustment knob.
5. After the low-power objective lens is in place, the specimen is centered, and the stage (barrel) is down, plug the microscope into an electrical outlet and turn on the light with the switch on the base of the microscope. Arrow G points to the light switch.
6. While looking through the eyepiece, slowly turn the coarse adjustment knob until the specimen comes into focus. You can fine-tune the focus by turning the fine adjustment knob. Arrow H points to the eyepiece, and arrow I points to the fine adjustment knob.
7. After your specimen is in focus, you may increase the magnification by turning the nose piece and snapping the next higher objective into place. Use the coarse and fine adjustment knobs to refocus.
8. You can make the image clearer by adjusting the aperture. While looking through the eyepiece, turn the iris adjustment wheel until you see the clearest image. Arrow J points to the iris adjustment wheel.

Level One Questions:

1. How are microscopic structures different from macroscopic structures?

1-1. THE COMPOUND MICROSCOPE, *continued*

2. List three examples of macroscopic structures.

3. Give one example of a microscopic structure.

4. On the diagram, which arrow points to the condenser? _____
5. Which arrow points to the eyepiece? _____
6. Which arrow points to the iris adjustment wheel? _____
7. Which arrow points to an objective lens? _____
8. Which arrow points to the nose piece? _____
9. Which arrow points to the coarse adjustment knob? _____
10. Which arrow points to the fine adjustment knob? _____
11. Which arrow points to the aperture? _____
12. What is the function of the fine adjustment knob?

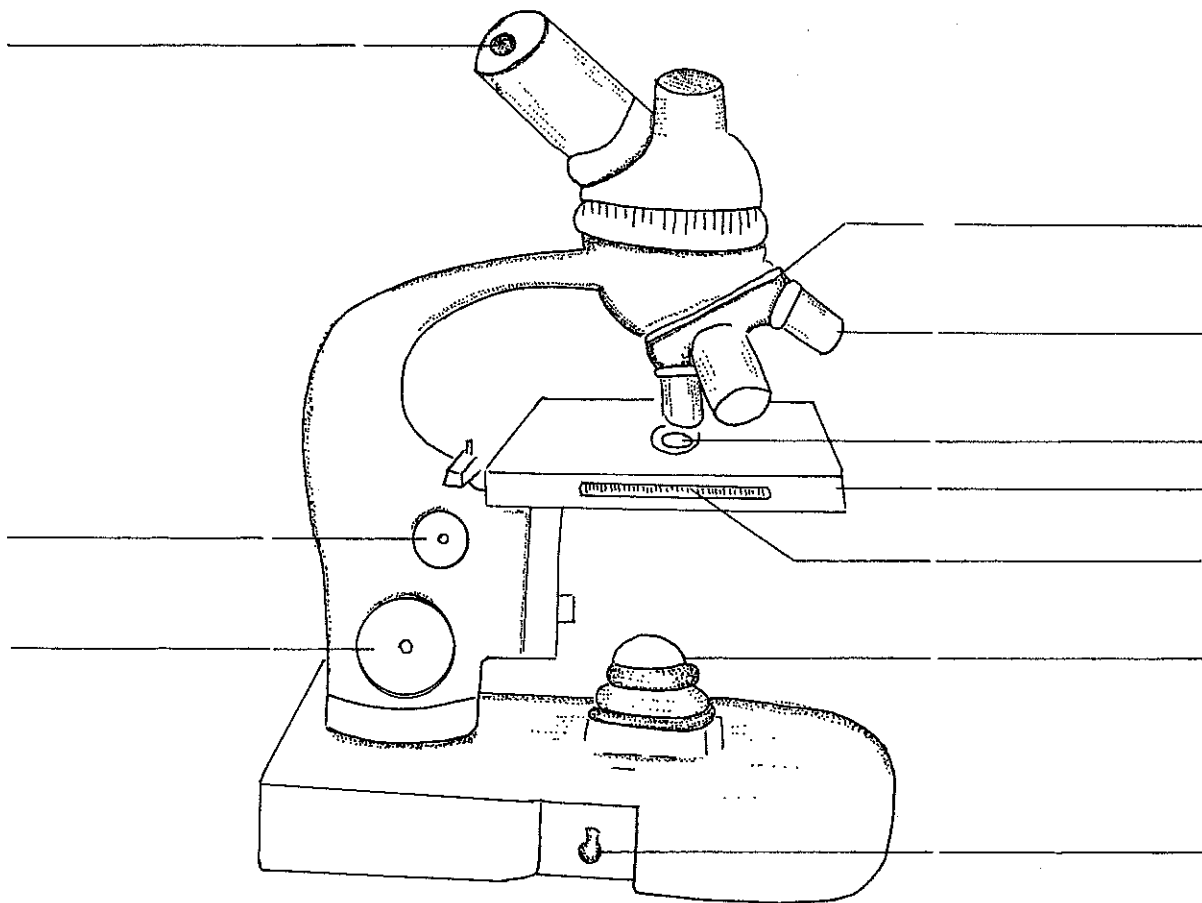
13. What is the function of the condenser?

14. What is the purpose of adjusting the aperture?

15. What is the function of the iris adjustment wheel?

1-1. THE COMPOUND MICROSCOPE, continued

16. Label the following diagram.



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17. The steps in focusing a microscope are presented below, but not in the correct order. Rearrange these steps into the correct order by writing numbers in the spaces provided. (Reread the preceding statements if necessary.)

- _____ Make sure that the low-power lens is snapped into place.
- _____ Look through the microscope and slowly turn the large focusing knob until the specimen comes into focus.
- _____ Move the specimen around until you see the best view.
- _____ Make sure that the specimen is centered where the light shines through.
- _____ Make sure that the barrel is all the way down.